



## Geologic Resource Evaluation and Mapping

### Introduction

The Geologic Resource Evaluation (GRE) Program is an on- going inventory that provides parks with a digital geologic map, a geologic evaluation report, and a geologic bibliography. This program is scheduled to be implemented at Shenandoah in the spring of 2005.

### Management Issues

Geology's role in earth systems includes not only bedrock and surficial features but active earth processes as well. This powerful component of all ecosystems is often overlooked in natural resource management and interpretation. However, there is a growing awareness that better understanding of earth science is critical to successful park management. The National Park Service recognizes that a thorough evaluation of the geologic resources within National Parks is needed for comprehensive management, interpretation, and understanding of park resources.

Geologists make and use special maps that show and identify the rocks at the surface of the earth. Geologic maps are important for deciding where to build trails and buildings and for a wide range of natural resource management applications including characterization of habitats that support certain plants and animals, reconstruction of fire history through analysis of sediments, and identification of geo- hazard zones. Digital geologic maps in conjunction with other spatial data can be useful for problem solving in geographic information systems.

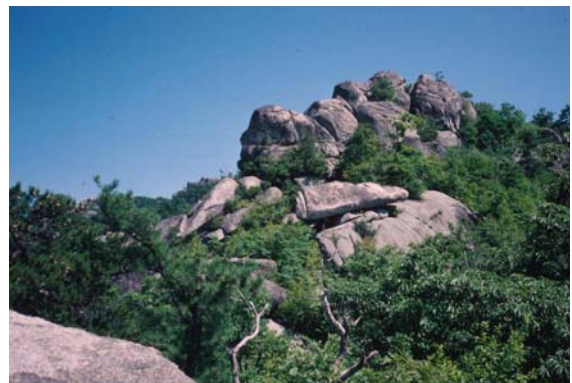


*Rock slide along Skyline Drive.*

### Current Procedures

Scoping meetings are held at parks to inventory and review available data on park geology and to discuss geologic issues. These meetings usually consist of 1 day in the field with USGS, state, local or academic experts to showcase park geologic resources and 1 day of round table discussions. Discussions center on the availability and quality of existing geologic information and park specific geologic management, interpretive, and research needs.

Once scoping is complete, efforts turn to the development of three primary products for a park (bibliography, map, and report). Geologic bibliographies are a subset of National Park Service "NRBIB" or NatureBib and an attempt to locate all known park geologic references. These references are incorporated into the GRBIB website and distributed as Microsoft Access databases. The sources of data for GRBIB are: AGI's GeoRef, USGS GeoIndex, and NPS park specific ProCite databases. The data are validated for park relevance and to remove duplicate citations. Bedrock and/or surficial geologic maps are prepared for the park in digital form. Digitizing geologic maps facilitates the incorporation of geologic considerations into a wide range of applications. Finally, park specific geologic reports identify geologic features and processes that are important to park ecosystems and management, the impact human activities have on geologic features and processes, geologic research and monitoring needs, and opportunities for education and interpretation. In addition geologic reports provide a brief geologic history of the park and address specific geologic formation properties thus providing a critical link between the geologic map and the resource manager.



*Old Rag Mountain.*



## Geologic Resource Evaluation and Mapping (continued...)

### Accomplishments

A geologic map was produced for the park in 1976 by the Virginia Division of Mineral Resources. Since that time, additional geologic investigations have occurred in the region that point to the need for map revision. Revised geologic mapping at Shenandoah National Park has been underway off and on since preparation of the first version. These efforts at revision have been spearheaded by scientists with the U.S. Geological Survey and a few key universities. These mapping efforts have not yet produced a single comprehensive map of the park.

For all practical purposes, the Geologic Bibliography is complete for Shenandoah although future work may reveal additional obscure reports and papers. If these are discovered, they will be incorporated into the Geologic Bibliography and NatureBib.

During the spring of 2005, the Geologic Resources Division, National Park Service will launch the scoping effort described above at Shenandoah. Based on the discussions in that meeting, work will begin on the preparation of a current comprehensive geologic map of the park and the development of the evaluation report. It is currently unclear exactly when final products will be available.

### References

Badger, R.L. 1999. *Geology Along Skyline Drive*. Falcon Publishing, Inc. Helena, Montana.

Gathright, T.M., II. 1976. *Geology of the Shenandoah National Park, Virginia*. Virginia Division of Mineral Resources Bulletin 86. Virginia Division of Mineral Resources, Richmond, Virginia.



*Rocky outcrop.*